

IN THE CLAIMS:

1. (Currently Amended) A decoder for a wireless communication device comprising:

a calculator for calculating the modulo of a linear approximation of a MAX* function; and

a selector for selecting a MAX* output value from the group $a(n) \bmod F$, $b(n) \bmod F$, and the calculated modulo based upon a determination as to whether a predetermined threshold value for $|a(n) - b(n)|$ has been met, where $a(n)$ is a first state metric, $b(n)$ is a second state metric, C is the predetermined threshold value and F is a value greater than $|a(n) - b(n)|$ whereby to enable the calculator to calculate the modulo of the linear approximation of the MAX* function using a $\bmod F$ function of $a(n) \bmod F$, $b(n) \bmod F$ and C .

2. (Original) A decoder according to claim 1, wherein the calculator is arranged to calculate the modulo of the linear approximation of the MAX* function

using: $\left(a(n) \bmod F + \frac{((b(n) \bmod F - a(n) \bmod F) \bmod F + C)}{2} \right) \bmod F$.

3. (Original) A decoder according to claim 1, wherein the calculator is arranged to calculate the modulo of the linear approximation of the MAX* function using:

$\left(\left(\frac{(a(n) \bmod F + C) \bmod F + b(n) \bmod F}{2} \right) \bmod F + F * s \right) \bmod F$, where s is equal to

$[a(m) \text{ XOR } b(m)] \text{ AND } [(a(m) \text{ XOR } a(m-1)) \text{ AND } (b(m) \text{ XOR } b(m-1))]$ and $a(m)$ $b(m)$ $a(m-1)$ and $b(m-1)$ are the most significant bits of $a(n)$ $b(n)$ $a(n-1)$ and $b(n-1)$ respectively.

4. (Currently Amended) A decoder according to ~~any preceding~~ claim 1, wherein the determination is based upon the sign of $(a(n) \bmod F - b(n) \bmod F - C) \bmod F$ and the sign of $(b(n) \bmod F - a(n) \bmod F - C) \bmod F$.
5. (Currently Amended) A decoder according to ~~any preceding~~ claim 1, wherein the selector is arranged to select and output the modulo of the linear approximation of the MAX* function if the value $|a(n) - b(n)|$ is less than the predetermined threshold value.
6. (Currently Amended) A decoder according to ~~any preceding~~ claim 1, wherein the value of F is to the power of two.
7. (Currently Amended) A decoder according to ~~any preceding~~ claim 1, wherein the selector is a multiplexer.
8. (Currently Amended) A decoder according to ~~any preceding~~ claim 1, wherein the calculator is an add module that is arranged to receive $a(n) \bmod F$, $b(n) \bmod F$ and C.
9. (Currently Amended) A method for generating a MAX* value, the method comprising:

receiving a first modulo state metric $a(n) \bmod F$, a second modulo state metric $b(n) \bmod F$ and a predetermined threshold value C for $|a(n) - b(n)|$, where F is a value greater than $|a(n) - b(n)|$ whereby to enable the modulo of a linear approximation of a MAX* function to be calculated using a $\bmod F$ function of $a(n) \bmod F$, $b(n) \bmod F$ and C; and

selecting a value from the group $a(n) \bmod F$, $b(n) \bmod F$, and the calculated modulo based upon a determination as to whether the predetermined threshold value C for $|a(n) - b(n)|$ has been met.

10. (Original) A method according to claim 9, wherein the modulo of the linear approximation of the MAX* function is calculated using:

$$\left(a(n) \bmod F + \frac{((b(n) \bmod F - a(n) \bmod F) \bmod F + C)}{2} \right) \bmod F.$$

11.(Original) A method according to claim 9, wherein the modulo of the linear approximation of the MAX* function is calculated using:

$$\left(\left(\frac{(a(n) \bmod F + C) \bmod F + b(n) \bmod F}{2} \right) \bmod F + F * s \right) \bmod F, \text{ where } s \text{ is equal to } [a(m) \text{ XOR } b(m)] \text{ AND } [(a(m) \text{ XOR } a(m-1)) \text{ AND } (b(m) \text{ XOR } b(m-1))].$$